CALS TEST NETWORK

AFCTN Test Report 93-048

AFCTB-ID 93-024

Technical Raster Transfer

Using:

Harris Corporation's Data

MIL-R-28002A (Raster)

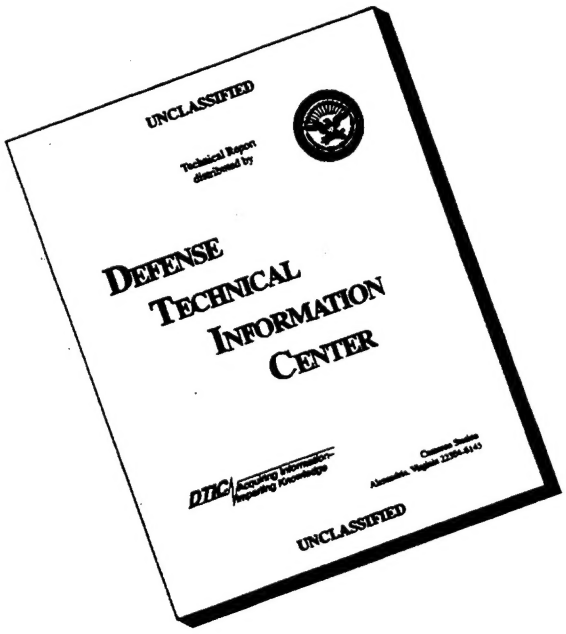
Quick Short Test Report

24 March 1993

Prepared for

Electronic Systems Center

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

Technical Raster Transfer Using: Harris Corporation's Data

MIL-R-28002A (Raster)

Quick Short Test Report

24 March 1993

Prepared By
Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

AFCTB Contact
Gary Lammers
(513) 427-2295

AFCTN Contact
Mel Lammers
(513) 427-2295

DISCLAIMER

This document was prepared as an account of work sponsored by the Air Force. Neither the United States Government or the Air Force nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the Air Force. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the Air Force, and shall not be used for advertising or product endorsement purposes.

Available to the public from the
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Rd.
Springfield, VA 22161

This report and those involved in its preparation do not endorse any product, process, or company stated herein. Use of these means by anyone does not imply certification by the Air Force CALS Test Network (AFCTN).

Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and to respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interacting with the AFCTN technical staff, gain experience using the standards, and develope increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Harris Corporation's interpretation and use of the CALS standards in transferring technical Raster image data. Harris used their CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 93-024

Date of Evaluation: 24 March 1993

Evaluator:
George Elwood
Air Force CALS Test Bed
DET 2 HQ ESC/ENCP
4027 Colonel Glenn Hwy
Suite 300
Dayton, OH 45431-1672

Data Originator:
Duane Bishop
Harris Corporation
301 Washington Street
Bellevue, NE 68005
(402) 293-3395

Data Description: Technical Manual Test
4 Document Declaration files
6 Raster files

Data Source System:

Raster

HARDWARE
Unknown

SOFTWARE
Unknown

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

SUN 3/280

- AFCTN *Tapetool v1.2.8 UNIX*
- XSoft *CAPS/CALS v40.4*
- Texas Instruments (TI) *Tapetool v1.0.1*

MIL-R-28002 (Raster)

SUN SparcStation 2

- ArborText *g42tiff*
- XSoft *CAPS ccitt2caps v6.0x*
- AFCTN *validg4*
- AFCTN *calstb.475*
- IGES Data Analysis (IDA) *IGESView v3.0*
- Island Graphics *IslandPaint v3.0*

PC 486/50

- Inset Systems *HiJaak v2.1*
- Inset Systems *HiJaak Window v1.0*
- Software Publishing Corporation (SPC) *Harvard Graphics v3.0*
- Corel *Ventura Publisher*

Standards Tested:

MIL-STD-1840A
MIL-R-28002A

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with the magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool v1.2.8* utility. No errors were encountered while evaluating the contents of the tape labels. The tape log is shown in Appendix A, Section Two, of the Tape Import Log in this report.

The tape was read using TI's *Tapetool* with no reported errors.

The tape was read using XSoft's *CAPS read1840A* utility with no reported errors.

3.2.2 Declaration and Header Fields

Four errors and four notes were found in the Document Declaration file header. All four Document Declaration files reported the same efforts. The transmitted date (dtetrn) was incorrect. The tape does not meet the CALS

MIL-STD-1840A requirements due to declaration file header errors in the submitted data. These errors were caused by a bug in the AFCTN *Tapetool* utility for DOS which was used by the submitter in the preparation of the tape. The bug has been corrected in the AFCTN *Tapetool v1.2.9*.

```
dtetrn: 7368
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year
    followed by a two digit month followed by a two digit day.
```

No errors were reported in the data file headers.

The tape does not meet the CALS MIL-STD-1840A requirements.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on this tape.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on this tape.

6. Raster Analysis

This tape contained six Raster files. All six files were evaluated using the AFCTN *validg4* utility. This program reported that all six files were in error. See the Appendix in this report for those errors.

The errors were detected at different lines in the files. All errors were detected within the first 100 scan lines with the exception of files D002R001 and D003R001. When checking the hard copies of these files, these are the only two with any readable areas.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how

commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

An attempt to convert the files into a postscript format using XSoft's *CAPS ccitt2caps* utility resulted in an error message, which indicated the files were bad.

Inset Systems' *HiJaak for windows* was used to convert and display the images. The first file, D001R001, caused the program to report a general error. The remainder of the files converted and displayed without a problem. When viewed on the screen, the images consisted of a series of random lines. File D002R001 had several lines of acceptable data before being lost. See the Appendix for hard copies of these files.

The files were converted using Inset Systems' *HiJaak for DOS* into an IMG format with no reported errors. The resulting files were read into Corel's *Ventura Publisher.* The resulting images consisted of random lines. See the Appendix for hard copies of the files.

The Raster files do not meet the CALS MIL-R-28002A specification.

SUBMITTER COMMENTS:

The error that occured with the Raster images was caused by the editing of the Raster header information using a text editor program. This may be of use as an example of what NOT to do. Duane A. Bishop - Harris Corp.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included on this tape.

8. Conclusions and Recommendations

In summary, the tape from Harris Corporation had four reported errors. These errors were caused by the tape writing utility. The physical structure of the tape does not meet the CALS MIL-STD-1840A requirements.

The errors with the Raster images are serious. All six Raster files were reported as having errors. The images, when converted, consisted of random lines. The Raster files do not meet the CALS MIL-R-28002A specification.

The tape does not meet the CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

```
Texas Instruments Catalog Evaluation - Version 1.0; Release Number 1

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed Mar 24 10:48:23 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/tt13/Set013

Tape Volume ID: CALS01
```

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Partial/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D002	Document Declaration	D/00260	02048/000001	Extracted
D003	Document Declaration	D/00260	02048/000001	Extracted
D004	Document Declaration	D/00260	02048/000001	Extracted
D001R001	Raster	F/00128	02048/000014	Extracted
D001R002	Raster	F/00128	02048/000015	Extracted
D002R001	Raster	F/00128	02048/000027	Extracted
D003R001	Raster	F/00128	02048/000057	Extracted
D004R001	Raster	F/00128	02048/000018	Extracted
D004R002	Raster	F/00128	02048/000017	Extracted

```
Catalog Process terminated normally.
```

9.2 Tape Evaluation Log

```
Texas Instruments Tape Evaluation - Version 1.0; Release Number 1
  Standards referenced:
    ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed Mar 24 10:48:05 1993

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01                                                              4

  Label Identifier: VOL1
  Volume Identifier: CALS01
  Volume Accessibility:
  Implementation Identifier:
  Owner Identifier:
  Label Standard Version: 4

HDR1D001             CALS0100010001000000 93071 00000 000000

  Label Identifier: HDR1
  File Identifier: D001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  93071
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:

HDR2D0204800260                                  00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00
```

```
************ Tape Mark **************

************ Tape Mark **************

  Minimum Block Size Found = 2048 Bytes.
  Maximum Block Size Found = 2048 Bytes.

  Number of data blocks read = 1.

EOF1D001            CALS0100010001000000 93071 00000 000001

  Label Identifier: EOF1
  File Identifier: D001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  93071
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000001
  Implementation Identifier:

EOF2D0204800260                                    00

  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark **************

                              <<<<< PART OF LOG REMOVED HERE >>>>>

************ Tape Mark **************

HDR1D004R002        CALS0100010010000000 93071 00000 000000

  Label Identifier: HDR1
  File Identifier: D004R002
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0010
  Generation Number: 0000
  Generation Version Number: 00
```

```
  Creation Date:  93071
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:

HDR2F0204800128                                    00

  Label Identifier: HDR2
  Recording Format: F
  Block Length: 02048
  Record Length: 00128
  Offset Length: 00

************ Tape Mark **************

************ Tape Mark **************

  Minimum Block Size Found = 2048 Bytes.
  Maximum Block Size Found = 2048 Bytes.

  Number of data blocks read = 17.

EOF1D004R002         CALS0100010010000000 93071 00000 000017

  Label Identifier: EOF1
  File Identifier: D004R002
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0010
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  93071
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000017
  Implementation Identifier:

EOF2F0204800128                                    00

  Label Identifier: EOF2
  Recording Format: F
  Block Length: 02048
  Record Length: 00128
  Offset Length: 00

************ Tape Mark **************
```

```
************ Tape Mark **************

############ End of Volume CALS01 ##############

############ End Of Tape File Set ##############

Rewinding tape to load point...

Deallocating /dev/rmt0...

Tape Import Process terminated normally.
```

9.3 Tape File Set Validation Log

```
Texas Instruments File Set Evaluation - Version 1.0; Release Number 1
  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    MIL-STD-804C (1990) - Formats and Coding of Aperture, Camera, Copy,
                          and Tabulating Cards
    MIL-R-28002 (1989) - Raster Graphics Representation In Binary
                         Format, Requirements For

Wed Mar 24 10:48:24 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set013

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Harris Corp  301 Washington St.  Bellevue,NE  68005-2558
srcdocid: CB170078test4    64755 A              00010001UMCAHN
srcrelid: NONE
chglvl: 1,A,19870122
dteisu: 19920430
dstsys: TILAA EDCARS System, McClellan AFB, CA  95652-5000
dstdocid: CB170078test4    64755 A              00010001UMCAHN
dstrelid: NONE
dtetrn: 7368
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year
    followed by a two digit month followed by a two digit day.
dlvacc: F04606-91-D-0159,DELIVERY ORDER NO. 0004 CDRL A003
filcnt: R2
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Product Data
docttl: PRINTED CIRCUIT BOARD

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Document Declaration File D001.

Searching for data files...

Found file: D001R001
Extracting Raster Header Records...
Evaluating Raster Header Records...
```

```
srcdocid: CB170078test4     64755 A              00010002UMCAHN
dstdocid: CB170078test4     64755 A              00010002UMCAHN
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 090,270
rpelcnt: 001700,002200
rdensty: 0200
notes: F04606-91-D-0159, DELIVERY ORDER NO. 0004 CDRL A003

Saving Raster Header File: D001R001_HDR
Saving Raster Data File: D001R001_GR4

Found file: D001R002
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: CB170078test4     64755 A              00010002UMCAHN
dstdocid: CB170078test4     64755 A              00010002UMCAHN
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 090,270
rpelcnt: 001700,002200
rdensty: 0200
notes: F04606-91-D-0159, DELIVERY ORDER NO. 0004 CDRL A003

Saving Raster Header File: D001R002_HDR
Saving Raster Data File: D001R002_GR4

Evaluating Document D001 numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking Document D001 file count...
No errors were encountered during file count verification.
File Count verification complete.

Saving Document D001 Map File: MAP.LIS

A total of 1 error(s), 0 warning(s), and 1 note(s) were
encountered in Document D001.
```

```
Found file: D002
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Harris Corp  301 Washington St.  Bellevue,NE  68005-2558
srcdocid: D73002641test4    64755                  00010001UMCDHN
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19911106
dstsys: TILAA EDCARS System, McClellan AFB, CA  95652-5000
dstdocid: D73002641test4    64755                  00010001UMCDHN
dstrelid: NONE
dtetrn: 7368
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year
    followed by a two digit month followed by a two digit day.
dlvacc: F04606-91-D-0159,DELIVERY ORDER NO. 0004 CDRL A003
filcnt: R1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Product Data
docttl: PLATE,IDENTIFICATION

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Document Declaration File D002.

Searching for data files...

Found file: D002R001
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: D73002641test4    64755                  00010001UMCDHN
dstdocid: D73002641test4    64755                  00010001UMCDHN
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 090,270
rpelcnt: 004400,006800
rdensty: 0200
notes: F04606-91-D-0159, DELIVERY ORDER NO. 0004 CDRL A003

Saving Raster Header File: D002R001_HDR
Saving Raster Data File: D002R001_GR4

Evaluating Document D002 numbering scheme...
```

```
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking Document D002 file count...
No errors were encountered during file count verification.
File Count verification complete.

Saving Document D002 Map File: MAP.LIS

A total of 1 error(s), 0 warning(s), and 1 note(s) were
encountered in Document D002.

Found file: D003
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Harris Corp  301 Washington St.  Bellevue,NE  68005-2558
srcdocid: WD633915test4     64755 F              00010001UMCEHN
srcrelid: NONE
chglvl: 1,F,19870609
dteisu: 19920421
dstsys: TILAA EDCARS System, McClellan AFB, CA  95652-5000
dstdocid: WD633915test4     64755 F              00010001UMCEHN
dstrelid: NONE
dtetrn: 7368
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year
    followed by a two digit month followed by a two digit day.
dlvacc: F04606-91-D-0159,DELIVERY ORDER NO. 0004 CDRL A003
filcnt: R1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Product Data
docttl: WIRING DIAGRAM,POWER AND GROUND

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Document Declaration File D003.

Searching for data files...

Found file: D003R001
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: WD633915test4     64755 F              00010001UMCEHN
dstdocid: WD633915test4     64755 F              00010001UMCEHN
txtfilid: NONE
figid: NONE
```

```
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 090,270
rpelcnt: 006800,008800
rdensty: 0200
notes: F04606-91-D-0159, DELIVERY ORDER NO. 0004 CDRL A003

Saving Raster Header File: D003R001_HDR
Saving Raster Data File: D003R001_GR4

Evaluating Document D003 numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking Document D003 file count...
No errors were encountered during file count verification.
File Count verification complete.

Saving Document D003 Map File: MAP.LIS

A total of 1 error(s), 0 warning(s), and 1 note(s) were
encountered in Document D003.

Found file: D004
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Harris Corp  301 Washington St.  Bellevue,NE  68005-2558
srcdocid: PL633404test4    64755 M              00010001UMCAHN
srcrelid: NONE
chglvl: 1,M,19870601
dteisu: 19920417
dstsys: TILAA EDCARS System, McClellan AFB, CA  95652-5000
dstdocid: PL633404test4    64755 M              00010001UMCAHN
dstrelid: NONE
dtetrn: 7368
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year
    followed by a two digit month followed by a two digit day.
dlvacc: F04606-91-D-0159,DELIVERY ORDER NO. 0004 CDRL A003
filcnt: R2
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Product Data
docttl: SYSTEMS COMMUNICATIONS UNIT

1 error(s), 0 warning(s), and 1 note(s) were encountered
```

```
in Document Declaration File D004.

Searching for data files...

Found file: D004R001
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: PL633404test4     64755 M              00010002UMCAHN
dstdocid: PL633404test4     64755 M              00010002UMCAHN
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 090,270
rpelcnt: 001700,002200
rdensty: 0200
notes: F04606-91-D-0159, DELIVERY ORDER NO. 0004 CDRL A003

Saving Raster Header File: D004R001_HDR
Saving Raster Data File: D004R001_GR4

Found file: D004R002
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: PL633404test4     64755 M              00010002UMCAHN
dstdocid: PL633404test4     64755 M              00010002UMCAHN
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 090,270
rpelcnt: 001700,002200
rdensty: 0200
notes: F04606-91-D-0159, DELIVERY ORDER NO. 0004 CDRL A003

Saving Raster Header File: D004R002_HDR
Saving Raster Data File: D004R002_GR4

Evaluating Document D004 numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking Document D004 file count...
No errors were encountered during file count verification.
```

File Count verification complete.

Saving Document D004 Map File: MAP.LIS

A total of 1 error(s), 0 warning(s), and 1 note(s) were encountered in Document D004.

A grand total of 4 error(s), 0 warning(s), and 4 note(s) were encountered in File Set Set013.

10. Appendix B - Detailed Raster Analysis

10.1 validg4 Logs

10.1.1 D001R001

```
 density      = 200
 path length  = 1700
 scan lines   = 2200
 bit format   = MSB

error, scan length exceeds pel count
s=68 a0=0 bstop=1701 pos=95

file = r101.cal
```

10.1.2 D001R002

```
 density      = 200
 path length  = 1700
 scan lines   = 2200
 bit format   = MSB

error getcode, no match in 12 bits
s=97 word=1f0 pos=34

file = r102.cal
```

10.1.3 D002R001

```
 density      = 200
 path length  = 4400
 scan lines   = 6800
 bit format   = MSB

error getcode, no match in 12 bits
s=1266 word=3f0 pos=2837

file = r201.cal
```

10.1.4 D003R001

```
 density      = 200
 path length  = 6800
 scan lines   = 8800
 bit format   = MSB

error, scan length exceeds pel count
s=150 a0=0 bstop=6802 pos=447

file = r301.cal
```

10.1.5 D004R001

```
 density      = 200
 path length  = 1700
 scan lines   = 2200
 bit format   = MSB

error, scan length exceeds pel count
s=97 a0=0 bstop=1702 pos=186

file = r401.cal
```

10.1.6 D004R002

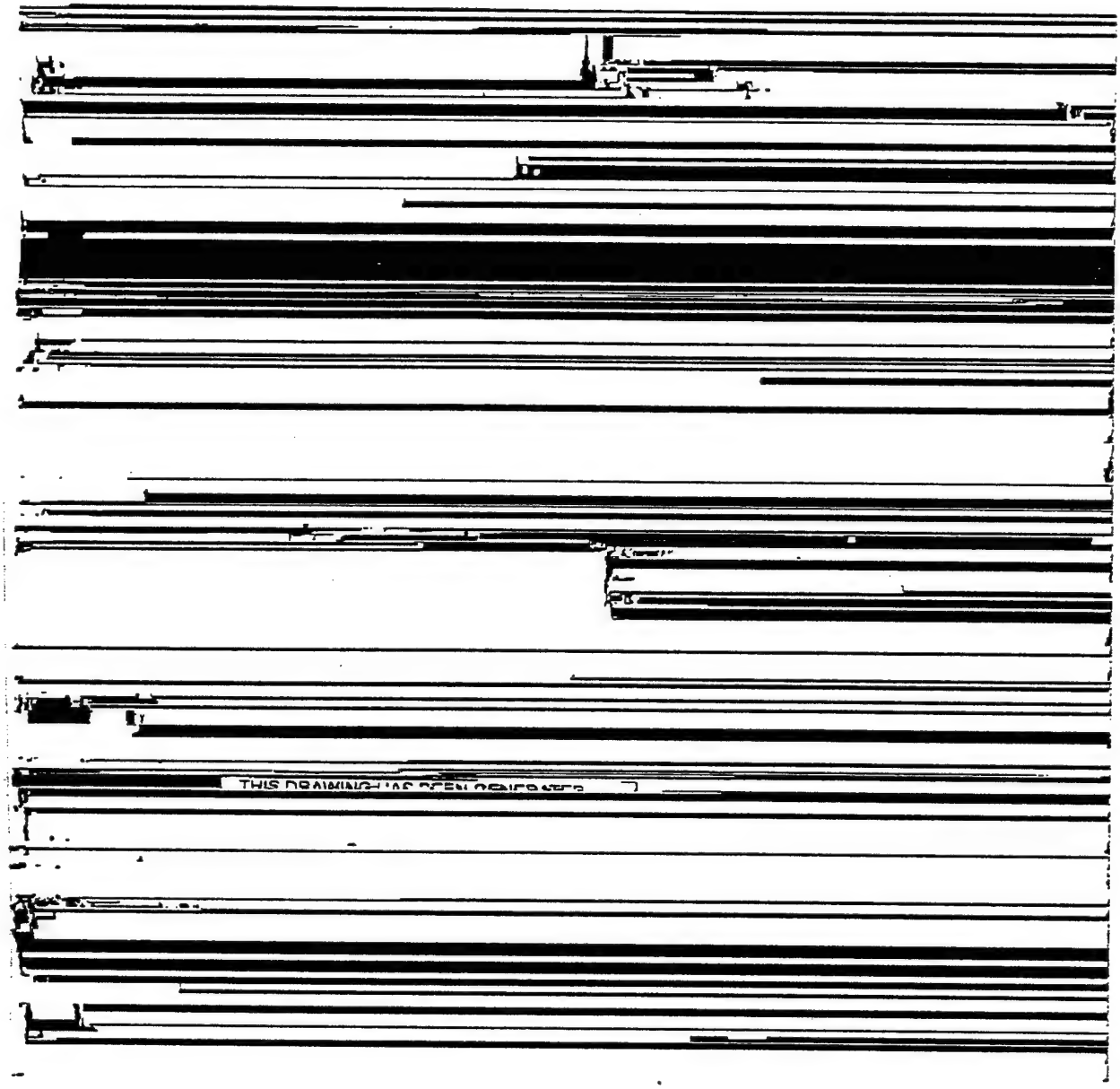
```
 density      = 200
 path length  = 1700
 scan lines   = 2200
 bit format   = MSB

error, scan length exceeds pel count
s=97 a0=0 bstop=1701 pos=198

file = r402.cal
```

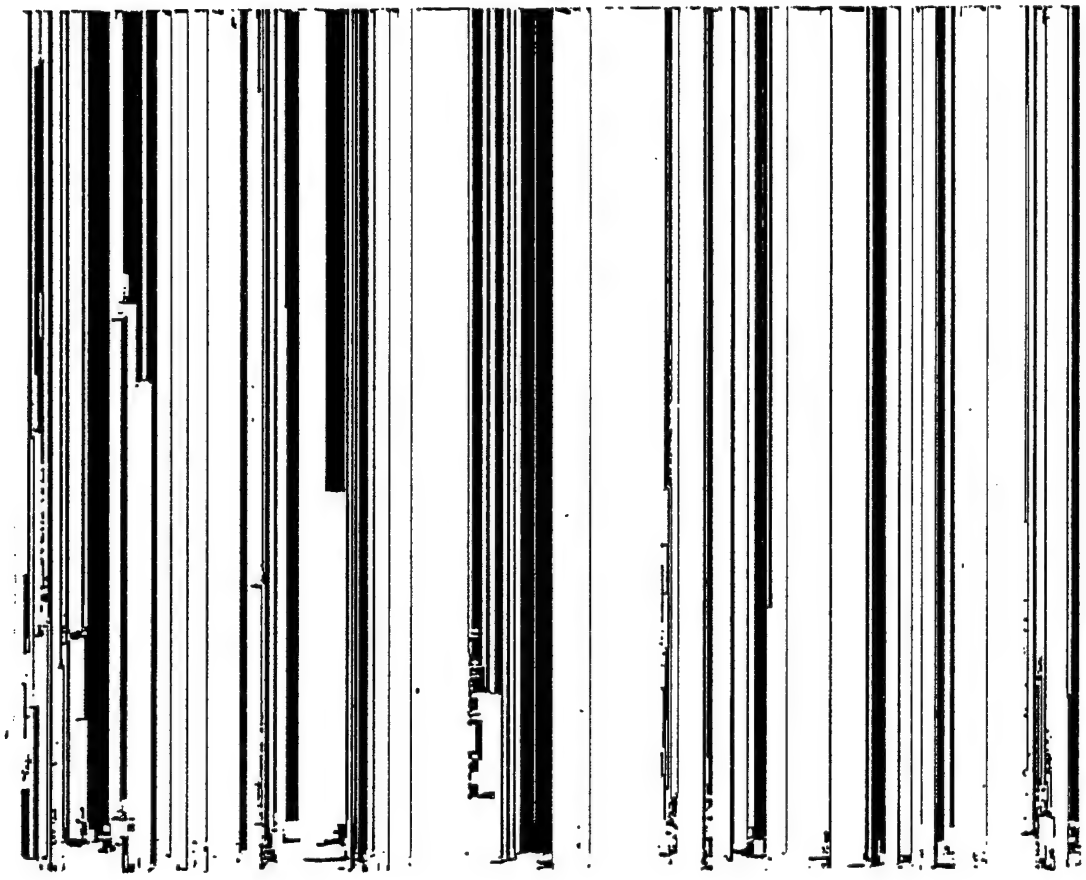
10.2 File D001R001

10.2.1 Output HiJaak/Ventura Publisher

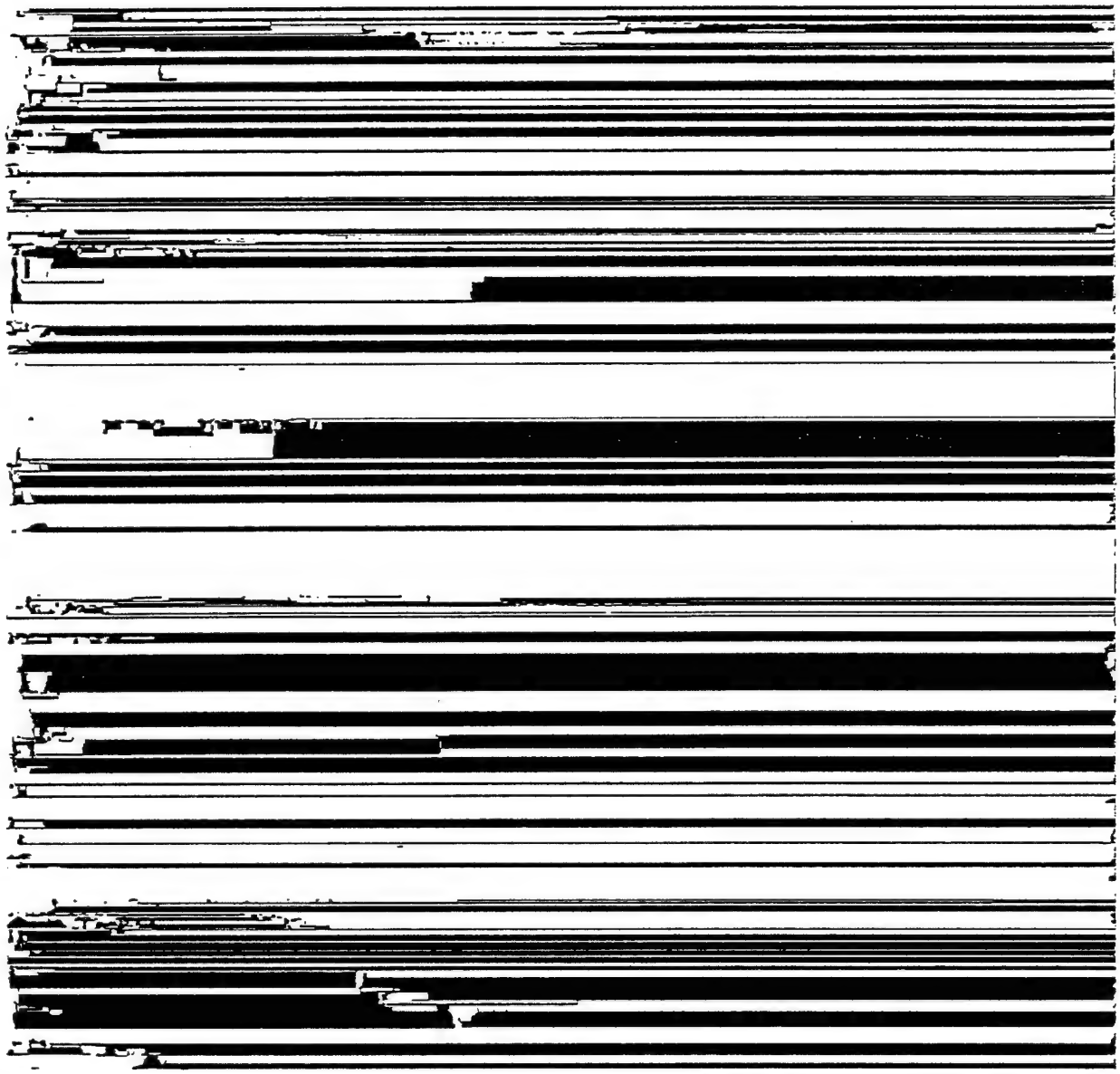


10.3 File D001R002

10.3.1 Output HiJaak for Windows

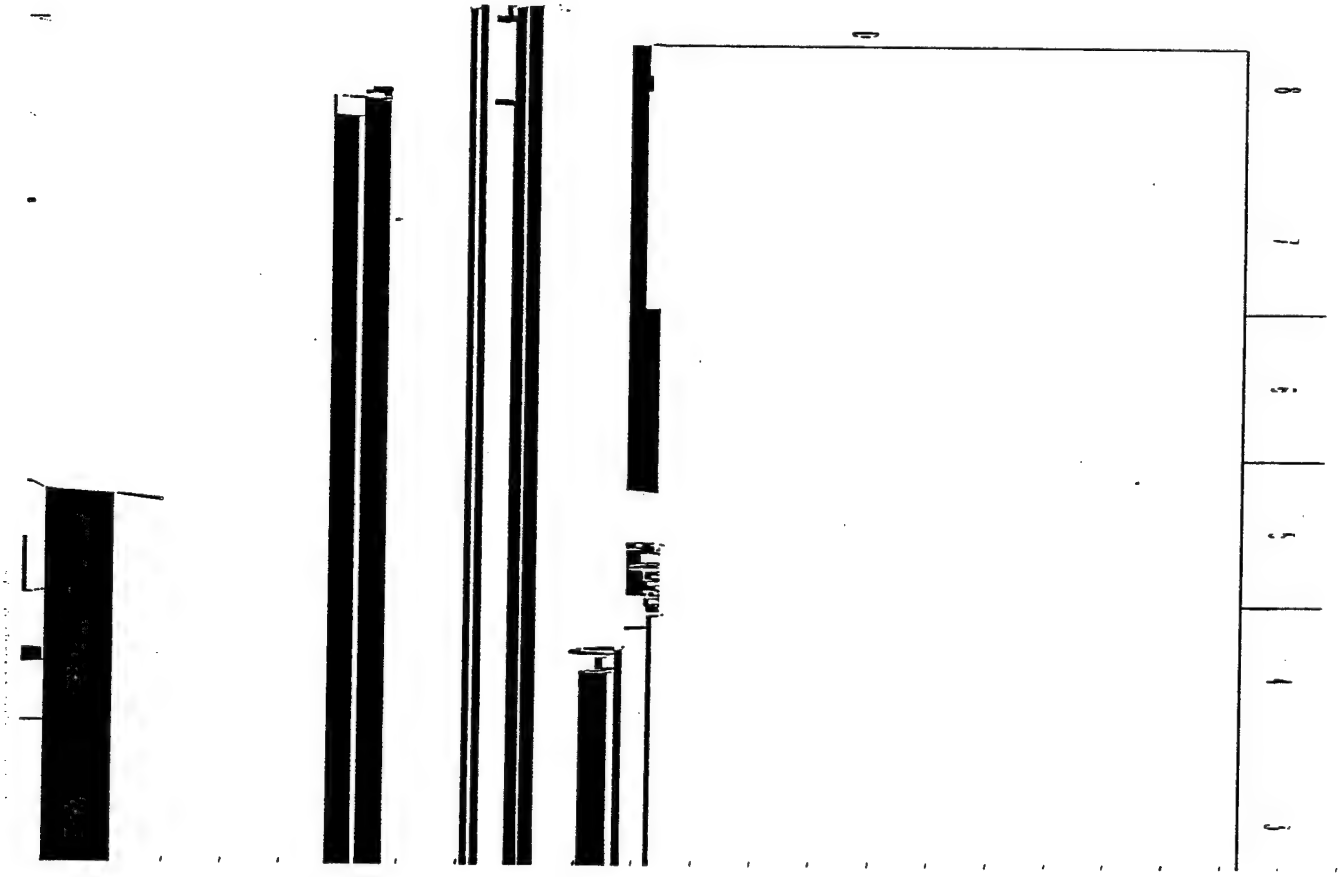


10.3.2 Output HiJaak/Ventura Publisher

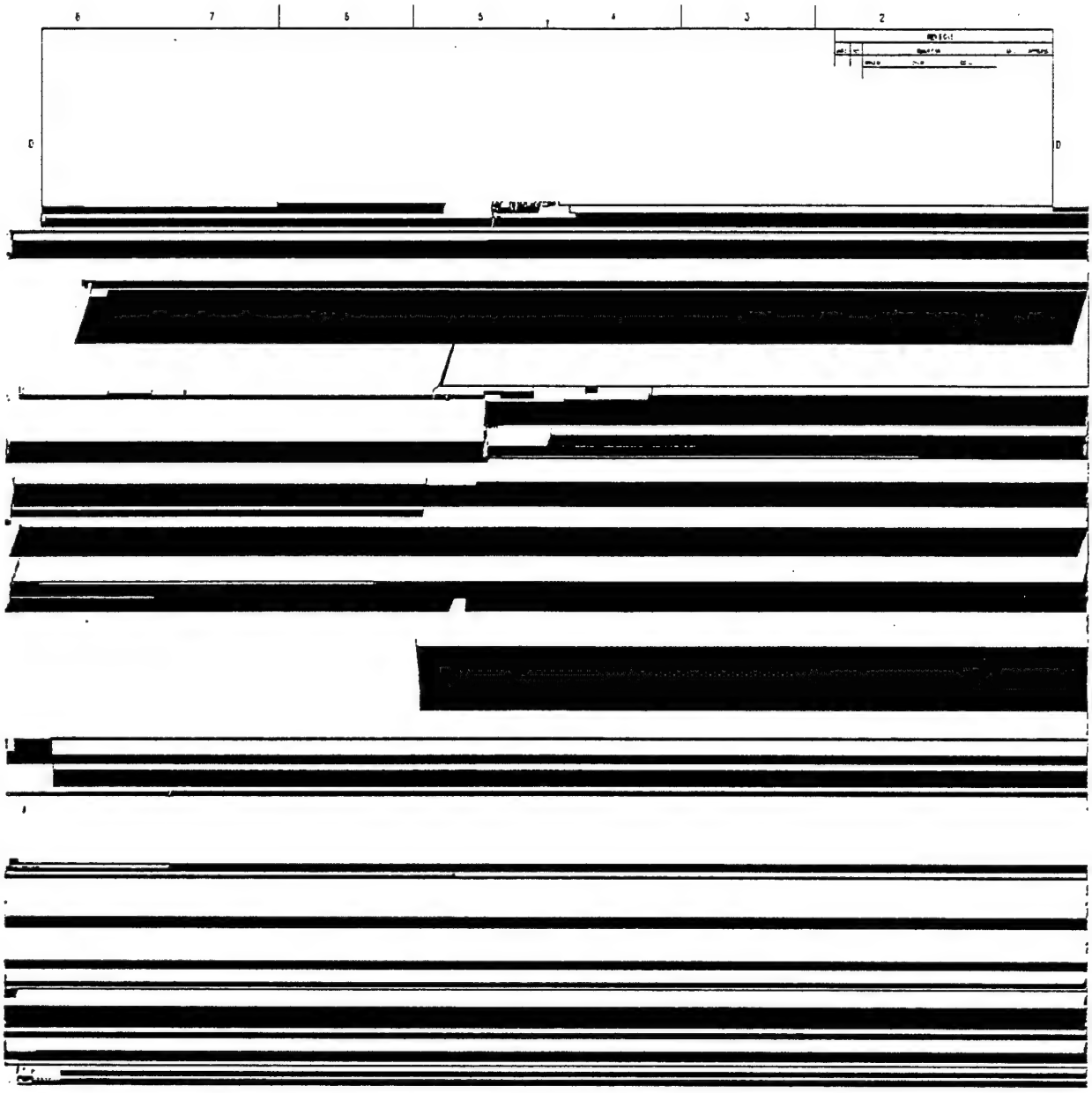


10.4 File D002R001

10.4.1 Output HiJaak for Windows

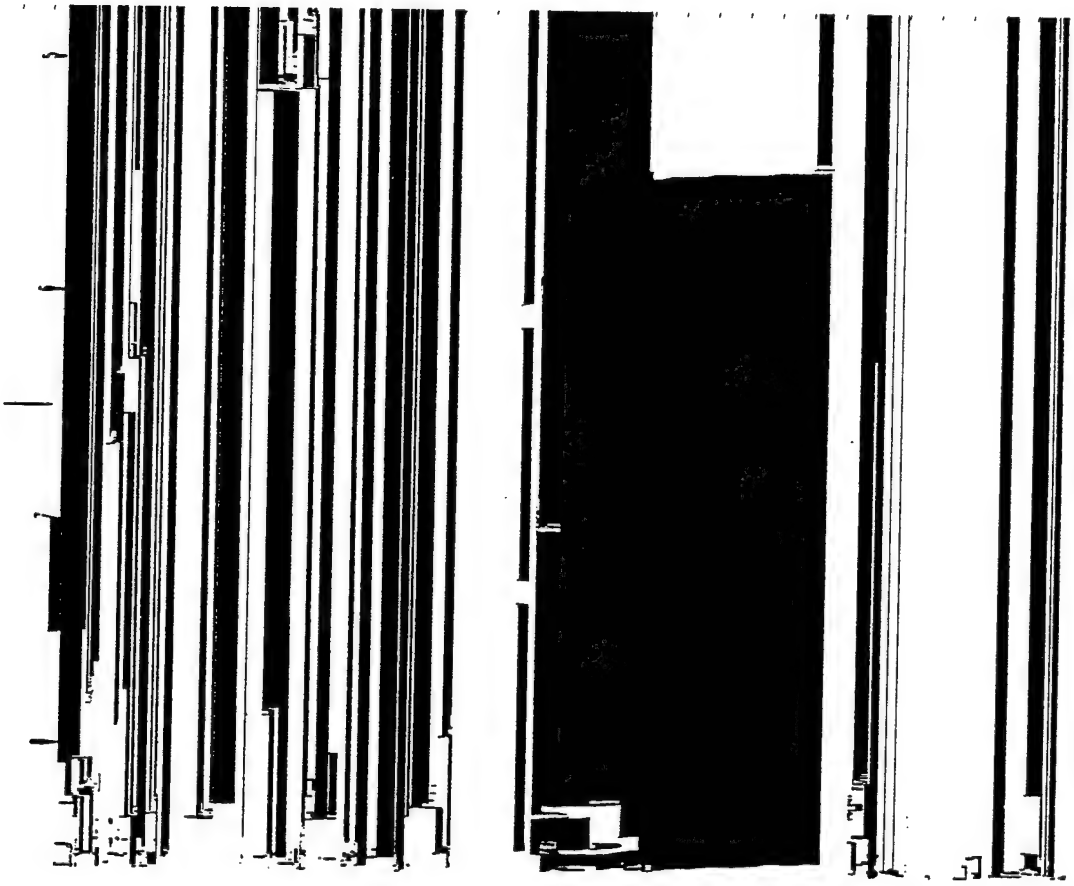


10.4.2 Output HiJaak/Ventura Publisher

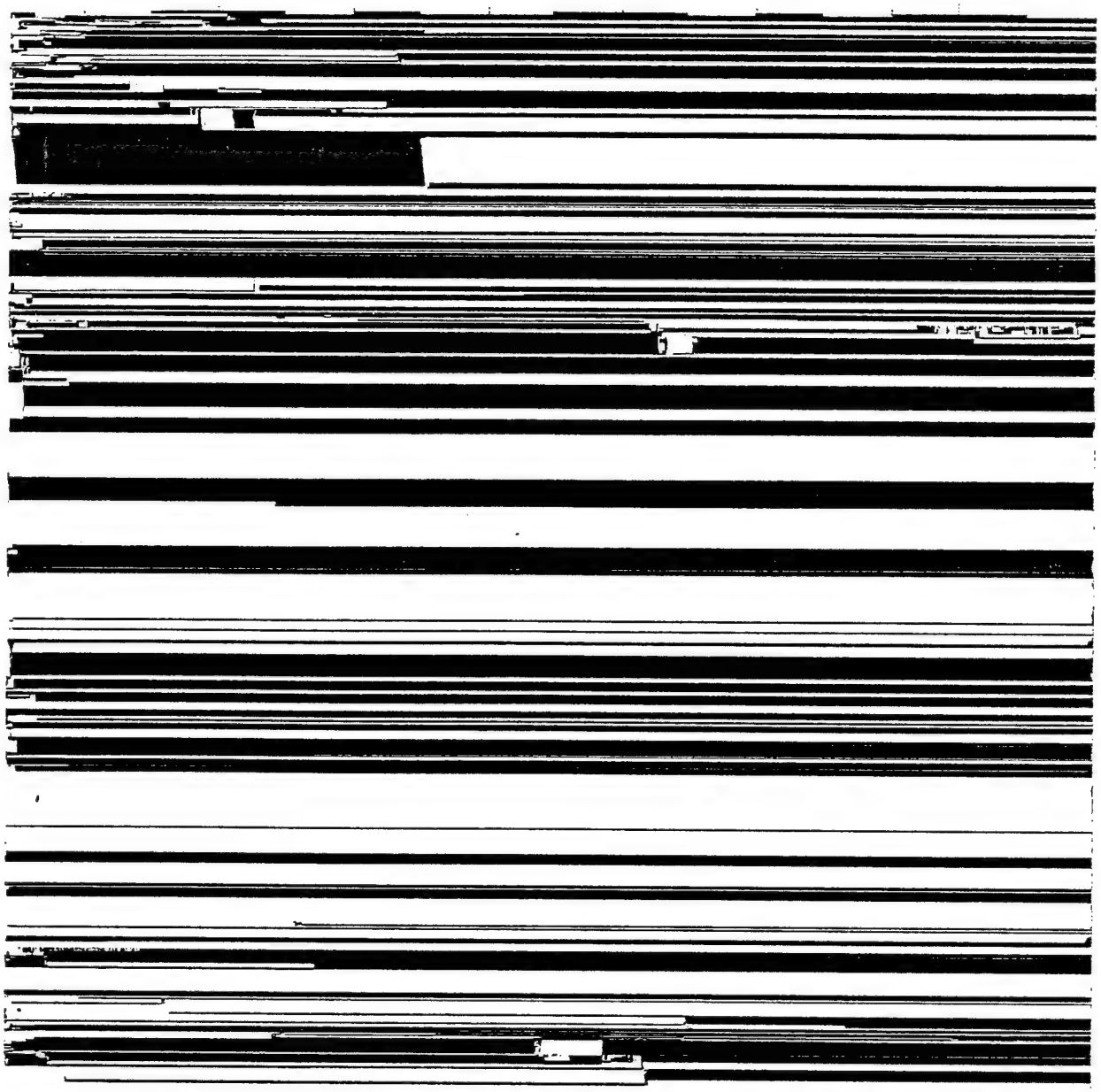


10.5 File D003R001

10.5.1 Output HiJaak for Windows



10.5.2 Output HiJaak/Ventura Publisher



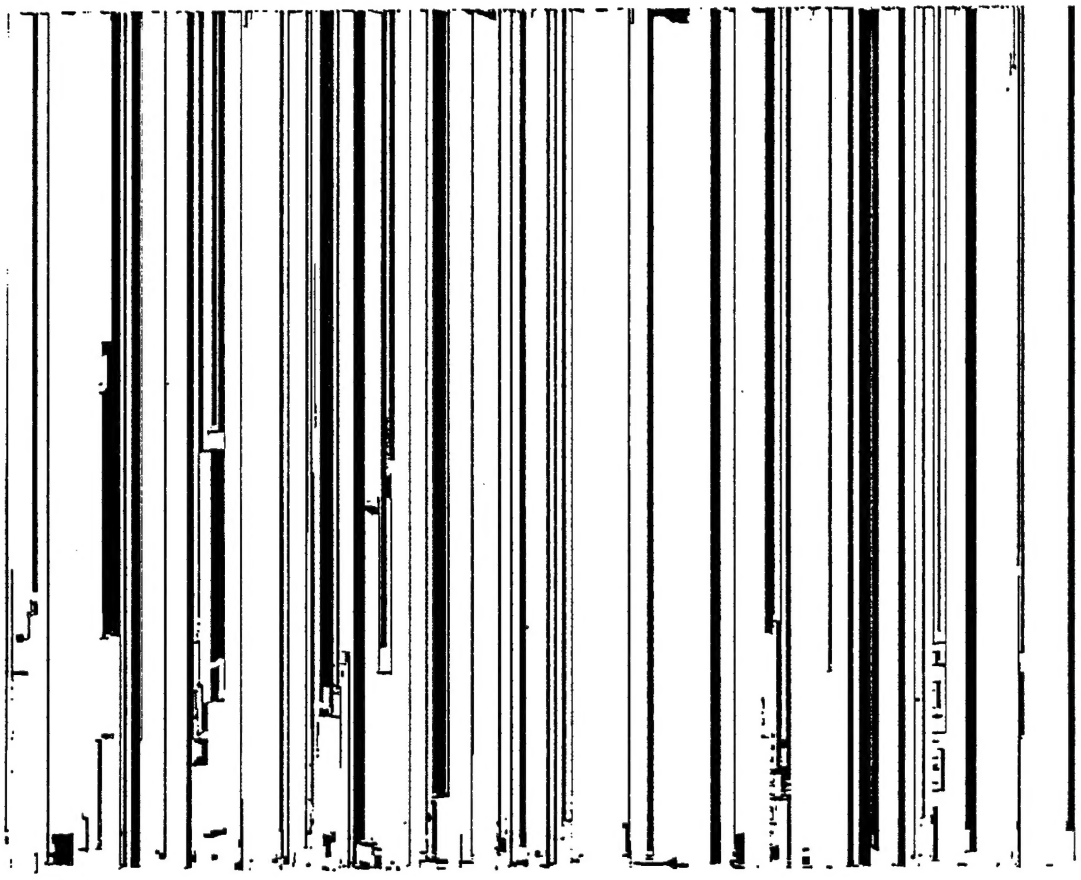
10.6 File D004R001

10.6.1 Output HiJaak for Windows

10.6.2 Output HiJaak/Ventura Publisher

10.7 File D004R002

10.7.1 Output HiJaak for Windows



10.7.2 Output HiJaak/Ventura Publisher